

3 Cryptids and credulity

The Zanzibar leopard and other imaginary beings

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The title of this book would justify the inclusion of Prince Hamlet, of the point, of the line, of the surface, of n -dimensional hyperplanes and hypervolumes, of all generic terms, and perhaps of each one of us and of the godhead. In brief, the sum of all things – the universe. We have limited ourselves, however, to what is immediately suggested by the words ‘imaginary beings’; we have compiled a handbook of the strange creatures conceived through time and space by the human imagination.

(Jorge Luis Borges and Margarita Guerrero, *The Book of Imaginary Beings*, translated by Norman Thomas di Giovanni (1969: 12))

Introduction

Borges and Guerrero’s playful collaboration, referred to above, takes the form of a parody of medieval bestiaries, and comprises a series of descriptions of ‘imaginary beings’, some of them imagined by the authors themselves and mixing real and sham erudition in Borges’ characteristic style (di Giovanni 2003: 133). It was originally published in 1957, anticipating the appearance in English of Bernard Heuvelmans’ *On the Track of Unknown Animals* (1958), the *locus classicus* of cryptozoology and model for numerous modern bestiaries.¹ Cryptozoology, literally ‘the science of hidden animals’, has been defined as ‘the study of the evidence for animals that are undescribed by science’ (Eberhart 2002: xlvii). ‘Undescribed’ is also unrecognised, and therein lies the contradiction that has led some critics to dismiss cryptozoology as a pseudoscience (for example Simpson 1984: 1), and that exposes its origin in the compilations of ‘fantastic zoology’ that are spoofed by Borges and his co-author(s) (Dendle 2006).

There is nothing intrinsically unscientific about searching for new (undescribed) and old (extinct) species, and one cryptozoologist has defined the discipline concisely as ‘a targeted-search methodology for zoological discovery’, noting that it is only one of a number of possible means to achieving this end (Arment 2004: 9). But all too often cryptozoologists’ desire to find hidden species and identify the imaginary as real leads them to downplay the negative evidence that carries more weight with conventional zoologists and ethnozoologists (Simpson 1984: 12–14; Meurger 1988: 11–24). Although there is also a strong tradition of debunking fakes and false claims within cryptozoology, it has failed to establish itself as an academic discipline (Coleman 2002: xxxiii), while

the professional association founded by Heuvelmans and colleagues – the International Society of Cryptozoology – has long since been defunct and its journal (*Cryptozoology*) extinct (Eberhart 2002: xxvii; see also Turner, this volume).

Our epigraph highlights a boundary problem that cryptozoologists have also struggled with: what kinds of phenomena or imaginary being fall within their remit? The subjects of cryptozoology are generally now referred to as cryptids, on one definition ‘the alleged animals that cryptozoologists study’ (Eberhart 2002: xxiii, also xlvii). Some restrict this to non-microscopic creatures they consider most likely to be discovered to be living species; others include historical and contemporary entities that are more obviously mythical (compare Greenwell 1985; Arment 2004: 11–12, 16–18). In his encyclopaedia Eberhart takes the broader view, and lists ten categories that most of the ‘mystery animals’ in his compilation fall into:

1. *Distribution anomalies [...]*
 2. *Undescribed, unusual, or outsize variations of known species [...]*
 3. *Survivals of recently extinct species [...]*
 4. *Survivals of species known only from the fossil record into modern times [...]*
 5. *Survivals of species known only from the fossil record into historical times [...]*
 6. *Animals not known from the fossil record but related to known species [...]*
 7. *Animals not known from the fossil record or bearing a clear relationship to known species [...]*
 8. *Mythical animals with a zoological basis [...]*
 9. *Seemingly paranormal or supernatural entities with some animal-like characteristics [...]*
 10. *Known hoaxes or probable misidentifications [...]*
- (2002: xxiii–xxiv)²

The subject of our chapter is the analysis of narratives and statements about an animal, the Zanzibar leopard (*Panthera pardus adersi*), which might be included in Eberhart’s third category, given that it has been declared by some authorities to be extinct, though many Zanzibaris remain convinced of its continued existence. The classic example of a carnivore in this category is the Thylacine or Tasmanian tiger (*Thylacinus cynocephalus*), and in a later section we will explore some of the differences and significant parallels between the two cases. Unlike its marsupial analogue, the demise of the Zanzibar leopard has been so recent that zoologists cannot be sure that no individuals survive. In this respect its cryptozoological (and ontological) status remains uncertain.

However, as an anthropological analysis of indigenous and other narratives about the leopard shows, it can be described under more than one of Eberhart’s headings: as the undescribed (and unusual) variation of a known species, as a mythical animal with a zoological basis, and perhaps even as a supernatural

entity with animal-like characteristics. Whereas popular cryptozoology typically reduces the investigation of imaginary beings to a single dimension ('do they exist or not?'), we argue that only careful anthropological and ethnozoological research can unravel the complexity of cases like that of the Zanzibar leopard and other so-called cryptids. And, as this introduction has implied, cryptozoology itself can also be analysed anthropologically, a subject we will return to briefly in our conclusion.

The Zanzibar leopard in scientific discourse

The Zanzibar leopard, *Panthera pardus adersi* (Pocock 1932), is an elusive subspecies of leopard endemic to Unguja, the principal island of the Zanzibar archipelago, off the coast of mainland Tanzania. This, at least, is how we understood its status in 1996, when we began our joint research on local knowledge about the leopard and the anthropogenic threats to its survival (Walsh 1996; Goldman and Walsh 1997).³ As we shall see, this statement now has to be qualified in the light of global studies of leopard genetics and new information about the likely impacts of hunting and habitat destruction on the local leopard population.

Although a number of visitors to Zanzibar in the nineteenth century noted the presence of leopards on Unguja, they did not become subjects of scientific investigation until the second decade of the twentieth century.⁴ The first properly curated specimen was collected by the Zanzibar Protectorate's Economic Biologist, William Mansfield-Aders, and sent to the British Museum in 1919. The mammal specialist at the museum, Reginald Pocock, noted that this and a second specimen were morphologically distinct from continental African leopards (*Panthera pardus pardus*), being significantly smaller in size and with a pelage of rosettes so densely packed together that they appeared to disintegrate into spots. In a subsequent major review of Africa's leopards he described the Zanzibar leopard as a separate subspecies and nominated the skull and skin collected by Aders as the holotype (Pocock 1932: 563).

Apart from collecting specimens, British officials and other foreign residents made little attempt to study the Zanzibar leopard during the lifetime of the British Protectorate. There are six known specimens in museums, all deriving from the period before the Second World War: three in the Natural History (formerly British) Museum in London, two in the Harvard Museum of Comparative Zoology in Cambridge, Massachusetts, and a mounted specimen in the Zanzibar (Peace Memorial) Museum (for details see Walsh and Goldman 2008). But very little was written about the leopard either before or after Pocock's description, and there are only scattered references to its natural history in the literature of this time (for example Mansfield-Aders 1920: 329). The British authorities were rather more interested in the protection of the leopard for its presumed economic value in keeping bushpigs (*Potamochoerus larvatus*) and other agricultural 'vermin' under control. This position brought them into conflict with villagers who felt strongly that leopards themselves

must be controlled because of their attacks on people (small children in particular) and livestock, widely believed to be the work of witches. Despite attempts by the British to restrict leopard-hunting and trapping, rural Zanzibaris continued to take the law into their own hands and deal with leopards (and witches) as they saw fit (Walsh and Goldman 2007: 1138–1148).

After the Zanzibar Revolution in 1964 local practice became national policy and statutory protection of the leopard was ignored. A nationwide campaign of witch-finding and leopard-killing ensued, with tacit support from the revolutionary government. When this petered out in the early 1970s, leopard-hunting continued as part of a government-subsidised campaign against animals considered to be vermin, and was still officially sanctioned when we began our joint research in 1996. Meanwhile, the Zanzibar leopard began to attract outside attention for the first time since the publication of Pocock's description in 1932. Although subsequent authors had followed Pocock (Allen 1939: 245; Moreau and Pakenham 1941: 119; Swynnerton and Hayman 1951: 335), Czech zoologist Luděk Dobroruka (1964) questioned his decision to name the Zanzibar leopard as a separate subspecies, and argued instead that it belonged to the eastern African form *Panthera pardus suahelica*. The wildlife artist and researcher Jonathan Kingdon, however, reiterated the distinctiveness of its pelage and reinstated it as an island endemic and subspecies in contrast to the African leopard, *P. p. pardus*, a category that subsumes the continental races (including *suahelica*) recognised by Pocock and later 'splitters' (1977: 351; 1989: 45). In his compilation of information on all of Zanzibar's mammals, R. H. W. Pakenham, a former British administrator who had helped send one of the Harvard specimens, agreed with Kingdon and explicitly rejected Dobroruka's position (1984: 48).

Little new information came from Unguja itself until the early 1980s, when Tanzanian research students were working on the island. Issai Swai provided an up-to-date description of the status and distribution of the Zanzibar leopard in his thesis on wildlife on the island (1983: 19–20, 48, 52–53). He also described what are still the only reported sightings of the leopard by researchers, one by himself at Mapopwe, another by colobus researcher Fatina Omari (Mturi) at Jozani (1983: 53).⁵ Unfortunately no one followed up with further fieldwork on the leopard, and little more was written about it until the 1990s, when donor agencies and NGOs promoting a conservation agenda began working closely with the Government of Zanzibar. Tony Archer, a Kenyan wildlife consultant working in Zanzibar, played an important role in bringing the Zanzibar leopard to wider attention (Archer et al. 1991: 65; 1994: 2, 17). Archer encouraged and advised many of the researchers who followed him, ourselves included. In 1994–95 three students wrote papers about the Zanzibar leopard, two of them young Americans taking part in an international study programme (Marshall 1994; Selkow 1995), and one a Zanzibari attached to the College of African Wildlife Management at Mweka (Khamis 1995). Their studies provided useful new information based on interviews with rural Zanzibaris, and led directly to our own survey of practices and beliefs threatening

the Zanzibar leopard (Walsh 1996; Goldman and Walsh 1997), which was commissioned by the CARE-funded Jozani–Chwaka Bay Conservation Project (JCBCP) and undertaken in July 1996.

One of the issues that we investigated was the likelihood of the Zanzibar leopard's survival. While a number of authors had already presumed it to be extinct (Smithers 1971: 3; Hes 1991: 165; Miththapala et al. 1996: 1126; Nowell and Jackson 1996: 27, fig. 6), we concluded that although it was critically endangered, a small population of leopards probably remained on Unguja. We argued that further research and a conservation programme were urgently required to stave off the imminent extinction of the Zanzibar leopard, and suggested a number of ways in which this might be approached (Goldman and Walsh 1997: iii–iv). Following our study, Goldman began to draft a leopard conservation programme for JCBCP, and South African wildlife researchers Chris and Tilde Stuart were recruited to determine the leopard's current status and distribution. However, they failed to find any firm evidence for the presence of leopards, and concluded that the Zanzibar leopard was either extinct or very nearly so (Anonymous 1997; Stuart and Stuart 1997a: 2–4; 1997b: 1; 1998: 35–37). Discouraged by this, JCBCP managers dropped the draft conservation programme and further research on the leopard was abandoned. Although the Zanzibar leopard continues to be reported as extinct (for example Uphyrkina et al. 2001: 2618; Kingdon 2004: 174; Finke 2010: 136), we have argued that the evidence for this is equivocal (Goldman and Walsh 2002). The Zanzibar government and Tanzanian researchers assume its continuing existence (for example Nahonyo et al. 2002: 48–49, 57, 84, 86–87; Ame 2003), and the WWF's *Strategic Framework for Conservation 2005–2025* for the Eastern Africa Coastal Forests Ecoregion lists knowledge of its population status as one of its indicators to be achieved by 2015 (Mugo 2006: 16).⁶

While there is uncertainty over the continued existence of the Zanzibar leopard, studies of leopard phylogenetics have cast renewed doubt on its classification as a separate subspecies. Whereas Pocock recognised twenty-seven trinomial subspecies of *P. pardus*, twelve of them African, genetic research has tentatively reduced the global total to a minimum of nine subspecies, including only one African subspecies, *P. p. pardus* (Miththapala et al. 1996; Uphyrkina et al. 2001; O'Brien and Johnson 2005: 416–417). The Zanzibar leopard has not been included in these genetic analyses – indeed it has been presumed extinct by the researchers – and as a result is now generally excluded from subclassifications of the world's leopards. However, the confirmation of two insular subspecies – the Sri Lankan leopard (*P. p. kotiya*) and the Javan leopard (*P. p. melas*) – through genetic work suggests the possibility that the Zanzibar leopard is similarly distinct from its mainland cousins, and that this hypothesis should at least be tested.⁷ We are participating in a project to do just this, and determine its phylogenetic position. Although a good case can be made for directing conservation towards separate populations regardless of their subspecific status (Jackson 2000), decisions about taxonomic status can influence the perceived significance of extermination. The Zanzibar leopard

has undoubtedly suffered in this regard, just as proposals for its conservation have been undermined by premature pronouncements of its demise.

These debates about the status of the Zanzibar leopard remind us that science comprises disputed hypotheses and competing narratives, and that this is true whether one views research from a broadly positivist or, by contrast, a social-constructivist perspective. It should be clear from the preceding account and our own participation in research and publication about the Zanzibar leopard that we ourselves adopt a position of scientific realism, though we are also keenly aware of the role that cultural and subcultural constructs can play in research. This approach forms the basis of our discussion of local narratives about the Zanzibar leopard, the subject of the sections which follow.

Ethnotaxonomies of the Zanzibar leopard

One of the most common strategies of cryptozoological research is to speculate on and seek to verify the identity of animals recognised ethnozoologically but not (yet) matched with known species or subspecies (Arment 2004: 56–73; see also Forth, this volume). Many town dwellers are unaware of the past or present presence of leopards on Unguja, though they do know about leopards (Swahili: *chui*) more generally through film, the media, folk tales, the name of a local football team, and the sale of leopard-print cloths. Zanzibaris in the rural areas or with a rural background are more likely to have heard of the Zanzibar leopard, especially those living in the villages on the coral rag areas where leopards were most common in the twentieth century (see the distribution maps in Swai 1983: 48; Goldman and Walsh 2002). Hunters and others with a more intimate knowledge of the island's leopards describe different varieties, but disagree on the names and definitions of these. As we shall see, it is not at all clear what their individual and in some cases idiosyncratic taxonomies refer to, and we are left with the equivalent of a cryptozoological puzzle.

The terminology of leopard varieties is specialised knowledge that cannot be found in any of the published Swahili dictionaries, including lexical collections of the dialects of rural Unguja. Pakenham (1984: 69) recorded *chui mwanzi* as a possible local name for the leopard in Mangapwani, north of Zanzibar town. But the existence of different named varieties didn't become apparent until Marshall (1994: 9) reported that all of his interviewees believed that there were two different varieties of leopard, *kisutu* and *konge*. Selkow (1995: 13) added a third type called *mwanzi*, this being an abbreviated version of the binomial recorded by Pakenham. He also reported the use of the names *kichigi* and *uwanda* as alternatives for *kisutu* and *konge* respectively, and speculated that the *konge/uwanda* variety was a 'black panther' or melanistic form of the leopard. A similar three-term (*kisutu*, *konge*, *muanzi* [sic]) and three-variety classification was given by the Zanzibari forestry officer Khamis (1995: 7). Although Selkow recognised that there was no clear consensus on the leopard's names or morphological description, the simpler classification reported by Marshall has since been reproduced in tourist

guides as a natural fact (for example Else and Tyrrell 2003: 57; McIntyre and McIntyre 2009: 54).

As it happens, the ethnotaxonomy of the Zanzibar leopard is even more complex than reported by Selkow. In July 1996 we elicited twenty-one terms for different varieties from twenty-nine interviewees, most of them hunters who claimed some familiarity with leopards.⁸ A further four informants described or knew of varieties but could not name them, two denied the existence of different types, and three (including a school teacher in Nungwi) admitted ignorance. Some of the terms are variants of the same nominal root or abbreviations of binomials of the form [*chui* (leopard) + qualifier], in which only the qualifier is retained (for example *unyasi* < *chui unyasi*). Interpreting these as equivalents, this still leaves fifteen different core terms. As Table 3.1 shows, however, there is considerable variation in the knowledge and application of these terms. Most interviewees recognised only two or three leopard varieties, but no two informants agreed entirely on the naming and description of these. Subsequent field research (for example by Goldman in 2003) has confirmed this pattern without adding to the list of names we recorded in 1996.

The existence of such divergent taxonomies mirrors a general sociolinguistic pattern on Unguja of local variation in the terminologies for plants and animals, the names of which sometimes vary from one village to the next. It presumably also reflects the fact that knowledge about the Zanzibar leopard is restricted, and has become increasingly so as fewer people have had direct experience of it (Walsh 1997; 2000). Under these circumstances it is not surprising that individual classifications should have become muddled, borrowing names and perhaps also categories from one another, as well as importing them from other taxonomies (for example of bushpigs) and vocabularies (for example the adoption of euphemisms as names for particular varieties). Ignoring the actual terms used, however, it is clear that they represent similar and overlapping sets of discrimination based primarily on perceived differences in the size, build, coat pattern and colour of leopards. The next question to ask is whether these reflect real differences in the morphology of individual leopards.

Knowledge of leopards elsewhere would lead us to expect that the principal observable differences are between animals of different ages and sex. Adult male leopards are generally larger than their female counterparts. We are not aware of studies that have documented male–female differences in pelage, which can vary by age – in older animals it can become paler in colour (Sunkist and Sunkist 2002: 320) – as well as look different according to the condition an individual is in, the amount of dust on its coat, and the light in which it is viewed. It is also the case that no two leopards have exactly the same coat pattern, and that there can be considerable variation in a single population as well as the presence of aberrant individuals (Kingdon 1977: 350; Sunkist and Sunkist 2002: 319–320). Melanistic leopards are relatively rare in East Africa, and there is no evidence in Zanzibaris' own descriptions to suggest that these have ever been found on Unguja, contrary to Selkow's supposition (see above). Unfortunately the six Zanzibar leopard specimens in museums provide scant information with which

Table 3.1 Names for Zanzibar leopard varieties elicited in July 1996

<i>Swahili name</i>	<i>Literal translation (if transparent)</i>	<i>Informant(s) (by residence)</i>	<i>Description given (salient features)</i>
<i>bete</i>	‘Dwarf (leopard)’	Chwaka	Short, robust
<i>kibete</i>	‘Small dwarf (leopard)’	Zanzibar town	Small, a synonym for <i>kichigi</i>
<i>bungala</i>	‘Bengali (-like leopard)’ (also applied to large bushpigs and varieties of banana, rice, and sugar-cane)	Charawe	Large, long, with glossy coat
<i>chui asili</i>	‘Original (typical) leopard’	Kizimkazi	Large, yellowish, fiercer than <i>chui uwanda</i>
<i>chui uwanda</i>	‘Bushland leopard’	Kizimkazi	Small, rufous
		Uzi 1	Small and shorter than <i>kisutu</i> , rufous, with small red patches
<i>futizi</i>		Jambiani	More gracile than <i>kisutu</i> , but less so than <i>konge</i>
<i>kariuki</i>		Charawe	Small or medium-sized, with rufous patches
<i>keke</i>	‘Disquiet, fear’; euphemism for leopards in general according to other informants in Kitogani and Makunduchi (1 and 2), and Chum (1994: 29)	Muungoni	Large, the largest of three (otherwise unnamed) varieties
<i>kichigi</i>	‘Mannikin, small bird sp. (-like leopard)’ (also applied to small bushpigs)	Makunduchi 1	Short, rufous (but no white)
		Makunduchi 2	Small, rufous
		Unguja Ukuu	Small, short, black and white (but no yellow), very fierce
		Zanzibar town	Small, a synonym for <i>kibete</i>

Table 3.1 (continued)

<i>Swahili name</i>	<i>Literal translation (if transparent)</i>	<i>Informant(s) (by residence)</i>	<i>Description given (salient features)</i>
<i>koko</i>	‘Wild (leopard)’	Paje	Small, shorter than <i>mkonge</i>
<i>konge</i>	‘Sisal leaf (-like leopard)’	Jambiani	Tall, slender
		Makunduchi 1	Long, red and black with a little white
		Makunduchi 2	Two kinds: (1) black with big spots; (2) white with small black spots
		Muungoni	Long, with spots which reduce the white background, and a big head
		Kitogani 2	Long and tall (hence the name), black and white
<i>konga</i>	Variant of <i>konge</i>	Muyuni	Large, with larger and more numerous spots than <i>umyasi</i> ; the most common type
<i>mkonge</i>	‘Sisal plant (-like leopard)’ (also applied to large bushpigs)	Kitogani 1	Long, yellow, with some white
		Paje	Long
		Uzi 2	Larger than both <i>kisutu</i> and <i>umyasi</i> , coloured like sisal leaves
		Zanzibar town	Large
<i>mwanzi</i>	‘Bamboo plant (-like leopard)’	Chwaka	Long, slender, yellow, with large black spots
		Ndudu	Long, coloured like <i>kisutu</i> cloth (pointing to a green and yellow example)
		Pete 1	With smaller marks than <i>kisutu</i>
		Zanzibar town	Richer yellow than <i>kichigi</i> and <i>mkonge</i>

<i>Swahili name</i>	<i>Literal translation (if transparent)</i>	<i>Informant(s) (by residence)</i>	<i>Description given (salient features)</i>
ngawa	'African civet (-like leopard)'	Ndudu	Patterned and coloured like the African civet (<i>Civettictis civetta</i>)
shambi-shambi	Cf. <i>shambi</i> , 'a gazelle' (Harries 1959: 68)	Pete 3	Similar to the African civet
shwambu	Euphemism for leopards in general according to other informants in Pete (1 and 2), Kitogani, and Jambiani	Pete 3	Very long, with very black and very white spots, and larger areas of white
sutu		Kitogani 2	= <i>kisutu</i>
kisutu	Diminutive of <i>sutu</i> ; also the name of a kind of <i>kanga</i> , patterned cotton cloth, worn by women: the <i>kisutu</i> is distinguished by its wide border and is typically rufous, black and white in colour	Dimani	Same size as other kinds, but a different colour, with black and yellow spots
		Jambiani	Large, robust
		Jozani	Black, coloured like <i>ngawa</i> , the African civet
		Kitogani 2	Short, yellow and black, a better colour than other varieties and more marketable
		Muungoni	With more white than <i>konge</i>
		Pete 1	With black stripes like a zebra, large splotches or spots
		Pete 2	Large, yellow
		Pete 3	(doesn't know)
		Unguja Ukuu (group)	Large, tall and long, yellow, with largish black spots

Table 3.1 (continued)

<i>Swahili name</i>	<i>Literal translation (if transparent)</i>	<i>Informant(s) (by residence)</i>	<i>Description given (salient features)</i>
<i>unyasi</i>		Uzi 1	Larger and whiter than <i>chui uwanda</i> , with large patches
		Uzi 2	With large spots of every colour, the fiercest type
	'Grass (-like leopard)'	Muyuni	Small, long, with more yellow than <i>konga</i> and small spots
		Pete 2	Smaller and darker than <i>kisutu</i> , with no white
		Pete 3	Red, with small white spots
<i>chui unyasi</i>		Uzi 2	Reddish, like the colour of (dry) grass
	'Grass (-like) leopard'	Pete 1	Yellowish

Source: Walsh 1997; 2000; 2007: appendix, table A3.

to verify these general statements or compare them with local descriptions. Only three of the specimens are sexed: the type specimen in London is described as a young adult male, while the two Harvard specimens are females presumed to be full adults. The male type has a much longer tail and so total body length than the females, and also has a broader (if not longer) skull. It also has a slightly different coat pattern, but in the absence of a much larger sample, including other known males, as well as more females and individuals of various ages to compare it with, it is impossible to hypothesise whether this is because of its sex or age, or is an individual feature. Otherwise it is difficult to evaluate the colour of these specimens because of the different ways in which they may have been preserved. The limited available evidence suggests that Zanzibar leopards exhibit sexual dimorphism similar to other leopard populations in Africa and Asia, but there is little that we can currently add to this.

When asked, hunters denied that different named varieties of leopard corresponded to the different sexes. One knowledgeable informant in Kitogani opined that *kisutu* leopards (which he contrasted with the larger *konge* variety) were more likely to be female, and recalled a male *konge* that had been killed by the National Hunters (*Wasasi wa Kitaifa*) in 1989 near the main road to Paje. But an interviewee in Pete described a male *kisutu* that he had shot near Pete in 1979 with the National Hunters: in his classification the larger *kisutu* type was contrasted with the smaller *unyasi*. Others described individual *kongalkonge* leopards as either male (an informant in Muyuni) or female (an informant in Makunduchi), while another man in Makunduchi remembered killing both male and female *kichigi* leopards during a long career as a hunter. As well as there being no general correlation between named variety and sex, hunters also offered different opinions on whether the different kinds could interbreed. And some, as we have already noted, denied that there were different varieties at all. Otherwise most informants who claimed to be able to distinguish between male and female leopards in the field did so on the basis of their behaviour (for example by their different vocalisations) rather than on their size and build.

Informants' identifications are difficult to test in the field because of the lack of both live animals and preserved whole skins. One of our research assistants, the former secretary of the National Hunters, had two small pieces of pelt taken from an unsexed leopard killed in Muyuni in 1986. He showed one of these pieces (illustrated in Walsh and Goldman 2008: 5, fig. 3) to some of our informants in the field. But whereas he identified this as being from a *mwanzi* leopard (distinguished by its colour as opposed to the large *mkonge* and the small *kichigi*), others classified it differently. A hunter in Jozani thought that it had come from a reddish-coloured variety of leopard that he did not know the name of, but which was different from the African civet-coloured *kisutu*. A hunter in Muungoni said that it was from a *konge* leopard (longer, and with a bigger head than the *kisutu*, which has more white on its coat), while a colleague in Kitogani used essentially the same name (*mikonge*, the plural of *mkonge*), a kind of leopard that he described as long and yellowish in colour,

with some white on its coat (in contrast to a shorter variety, bluish in colour, that he could not name). The first and second identifications can be interpreted as having the same or similar referents, but this is clearly different from the (*m*)*konge* type described by the last two informants. This is the closest we have to a systematic experiment, and again the results suggest divergent views.

The different taxonomies of the Zanzibar leopard that we recorded cannot be reconciled into a single classification that correlates neatly with known differences between animals. Although not claiming to be cryptozoologists, Marshall and Selkow took a naïve cryptozoological approach to this ethnozoological problem by assuming that the names they were given mapped directly onto different varieties of leopard. As we have seen, they were mistaken, and the varieties they thought they were describing turn out to be imaginary.⁹ Careful ethnozoological and linguistic research is required in cases like this (as exemplified by Forth's contribution to this volume). The cryptozoological question is still valid: what, if anything, do the categories in Zanzibari leopard taxonomies refer to? The status of the Zanzibar leopard and the state of knowledge about it is such that this has become a very difficult question to answer. The (past) existence of the leopard itself is not in doubt, but information on its morphology and the possible referents of local descriptions is hard to come by, let alone verify. As a result we may never fully understand these taxonomies, and may never shake off the suspicion that they refer to imaginary beings, or rather imaginary categories of the being that is (or was) the Zanzibar leopard.

Witchcraft and leopard-keeping narratives

Cutting across these individual taxonomies of leopard morphology is another, much more widely known, classification of leopards on Unguja. This is the distinction between 'wild' leopards (*chui wa mwitumi*), and 'domesticated' leopards (*chui wa kufugwa*).¹⁰ The latter are thought to be kept by witches (*wachawi*, *wabaya*) and used by them to intimidate their fellow villagers. When asked how they distinguish between wild and kept leopards, rural dwellers point out that wild leopards are only observed far away from human settlement and typically run away when disturbed. A leopard seen, heard or tracked in the vicinity of a village, or thought to have followed or attacked people or livestock, can be assumed to be a kept leopard. Sometimes, it is said, they are seen together with their owners, and then the status of both the leopard and its keeper is in no doubt. This is also the case when a leopard is seen that is wearing earrings, anklets, or other items of adornment and clothing. Informants suggest various proportions of wild to kept leopards, but agree that wild leopards can become kept leopards – when leopard keepers gain control over them through the use of magic – and kept leopards can become feral – when a leopard keeper dies without transferring his leopard to another keeper and the animal simply returns to the forest.

Belief in leopard-keeping provides a ready explanation for the appearance of leopards in settled areas and their occasional attacks upon livestock and

Table 3.2 The vocabulary of leopard-keeping narratives

<i>Swahili term</i>	<i>Literal translation</i>
Leopard (generic)	
<i>chui</i> [c ^h ui]	'Leopard'
Wild leopard	
<i>chui mwitu</i>	'Forest leopard'
<i>chui wa mwitu</i>	'Forest leopard'
Kept leopard	
<i>chui wa fundi</i>	'Specialist's leopard'
<i>chui wa kufugwa</i>	'Tamed, domesticated, kept leopard'
Leopard-keeping	
<i>ufugaji chui</i>	'Leopard-training, leopard-keeping'
Leopard keeper	
<i>fundi</i>	'Skilled person, specialist'
<i>mfugaji</i>	'Tamer, trainer, breeder'
<i>mfuga chui</i>	'Leopard trainer, breeder, keeper'
<i>mwenye chui</i>	'Leopard owner'
Witch (generic)	
<i>mbaya</i>	'Bad, evil person'
<i>mchawi</i>	'Witch, sorcerer'
Guild (generic)	
<i>chama</i>	'Club, association, guild' (including leopard keepers'/witches' guilds)

Source: 1996 fieldnotes, Goldman and Walsh 1997.

humans. This represents a specific and compelling development of more general ideas about witchcraft and sorcery in Zanzibar (Ingrams 1931: 465–477; Goldman 1996: 349–357; 371–378; Arnold 2003), ideas which themselves reflect patterns that are widespread in Sub-Saharan Africa and further afield (Evans-Pritchard 1937; Middleton and Winter 1963; Marwick 1970; Moore and Sanders 2001; Stewart and Strathern 2004; West 2005). Like witchcraft beliefs in general, they provide a handy explanation for particular cases of misfortune and other unusual events, can function as a tool for social maintenance and control, and possess a circular logic that is virtually unassailable in the context of local discourse – though individual doubters do exist. In the normal course of affairs alleged leopard keepers are not accused openly, but are the subjects of rumour, gossip and appropriate degrees of fear and respect. On occasion, though, leopard keepers and witches have been publicly accused in Zanzibar, giving these beliefs a more dynamic role in promoting social and political change. Some examples of

this have already been mentioned, and are described in greater detail in an earlier paper (Goldman and Walsh 1997).

The standard narrative of leopard-keeping is elaborated in many ways, and incorporates details of how the leopards are obtained and bred, how they are kept and fed, and how they are trained and manipulated by their (mostly male) owners, who are thought to form leopard-sharing associations (*vyama*, singular *chama*) (Goldman and Walsh 1997: 5–15). Leopard keepers are said to obtain their leopards in a variety of ways: by inheriting them from kin, being given or sold them by a friend, relative, or more distant associate, or by habituating wild leopards. Wild leopards can be habituated by leaving out food to which magical ingredients (*dawa*) have been added. According to one of our informants, a novice acquires co-ownership of a leopard in the following way: enlisting the aid of an experienced leopard keeper, the would-be leopard owner goes with his friend out into the forest, where the keeper summons his leopard. The keeper's assurances overcome the leopard's reluctance to draw near a stranger, and over the course of several days the animal is habituated to the new person. Finally, the keeper commands the leopard to obey his new associate and the leopard waves its tail to show its consent. The novice is now the leopard's co-owner.

It is believed that a single leopard is commonly shared by several keepers, who may or may not be related and/or reside in the same community. For example, although it is said that there are no leopards on Tumbatu island, lying off the northwest shore of Unguja, it is also thought that some Tumbatu people may have 'shares' in leopards on the main island. The notion of leopard-keeping associations (*vyama*) is consistent with the more general Zanzibari belief (also held on Pemba island, where there are no leopards) that witches are highly social, if amoral, beings organised into cohesive guilds (*vyama*) with particular initiation processes, membership rules, headquarters (invisible to the uninitiated), hierarchies and group activities (Goldman 1996; Arnold 2003). Some of our informants asserted that leopard keepers control their leopards with the help of possessory spirits (*mashetani*), and it may be no coincidence that leopard-keeping itself is generally described in the same terms as the domestication and care of spirits by humans. Indeed, there is historical evidence suggesting that contemporary ideas about leopard-keeping derive from changing understandings of the role that village ritual specialists (*wavyale*, singular *mvyale*) once played as the guardians and propitiators of local spirits (*mizimu*), leopards, and other wild animals (for details see Walsh and Goldman 2007: 1141–1145). An old hunter in Charawe described being taken by his maternal grandfather's brother to a spirit shrine (*mzimu*) in a cave near the coast. They went there to make offerings and seek a cure for his wife's sickness. When they were there a leopard emerged from the cave: this wasn't really a leopard, he said, and it wasn't kept, but it was a *shetani* or spirit that would attack the witch that had caused his wife's illness. She subsequently recovered. Other interviewees told us that leopards could become invisible, like witches themselves.

Leopards are said to be kept by groups of witches, rather than individuals, as a way of protecting themselves from retribution. If a person believes that they have been the victim of witchcraft, including harassment by a kept leopard, they may announce that they will read a much-feared religious curse (*halbadiri*) that will condemn the perpetrator or leopard keeper to death (see Ingrams 1931: 472). In such cases, a single leopard owner will receive the full measure of the curse. However, a group of leopard keepers can shift their shared animal from owner to owner, and village to village, thereby dodging the effects of the curse. This belief can also be used to explain why, in some instances, no suspected witches in a community fall fatally ill immediately after the recitation of the curse.

Leopard keepers are believed to exercise control over their animals through the regular supply of magically doctored food to them. Several informants claimed to have spied leopard keepers provisioning leopards at some isolated spot in the bush. Kept leopards may reside in the bush, in which case they are summoned by their owners by knocking sticks or pieces of wood against one another or other objects. This activity is another which informants claim to have seen and, along with food provisioning, is commonly cited as evidence for the practice of leopard-keeping. Other leopards are thought to reside in their keepers' homes, usually in a special room and often under a bed. According to some informants, the sight of a leopard entering a home or disappearing in the immediate vicinity of a house is not uncommon and constitutes clear evidence of leopard-keeping. The translocation of kept leopards, as when an owner inhabiting one village 'lends' the leopard to a co-owner residing elsewhere, is effected through the transference of a small charm (*pingu*), sometimes unwittingly carried by a third party. Aside from the use of doctored food and such charms, the precise mechanisms through which kept leopards are supposed to be controlled and sent by their owners to do harm remain unelaborated.

Kept leopards are said to be deployed by their owners for a number of reasons: to terrorise people and induce respect; to guard livestock or other wealth; to obtain food in the form of meat; and to make money through breeding and the sale of their offspring. Harassment by kept leopards can take several forms, ranging from the animal simply allowing itself to be seen at a distance, to entering a village, mauling livestock, and savaging human beings. The object of harassment may be a single individual, a family, or an entire community. One informant explained that because an individual is embedded within a community, a leopard keeper cannot harass one person without frightening great numbers of others. Indeed, he continued, there have been cases of entire villages being abandoned as a result of particularly harrowing bouts of leopard harassment. It is widely believed that the mere sighting of a kept leopard causes the observer to become instantly ill, and that a particularly close encounter will result in leopard hairs appearing in the victim's vomit or faeces. The only remedy for afflictions of this kind are traditional means of curing which typically involve divination in order to determine the source of the evil. Divination is not always necessary, however: it is believed that after

someone has seen a leopard, its keeper usually visits the victim the following day, greeting him effusively and enquiring solicitously about his health and welfare. Such conduct – which an outsider might consider part and parcel of normal Zanzibari social behaviour – is considered a flimsily disguised menace that serves to inform the victim that his outwardly amiable interlocutor was the person responsible for the leopard encounter and that it would be wise for the victim not to cross the keeper again in any way.

Due to their association with witchcraft and the threat they pose to life, limb, and livestock, leopards are hated and feared by rural Zanzibaris, including the hunters who encounter and sometimes kill them by accident. Though some stated that a leopard owner need only touch the body of his killed leopard and the hunter will rumble like a leopard or even die, others described a range of protective measures that could be taken, including the removal of certain body parts from a dead leopard. The larynx (*koromeo*) or throat (*koo*), for example, must be excised lest the owner discover the carcass and use the parts as the basis for a powerful hex on the leopard killer. In addition, a leopard killer sometimes removes other parts such as the claws that can be employed to concoct a magical recipe that will protect him from future leopard encounters. Such prophylactic measures are also applied to livestock and especially hunting dogs. Finally, it should be noted here that kept leopards are themselves believed to be protected by magic. A number of informants claimed that this magic causes hunters' guns to jam, though others said this was not so: the age and state of many guns currently employed in Zanzibar makes malfunctions quite likely. Nonetheless, the fear induced by leopards and belief in leopard-keeping are such that they resulted in determined attempts to eliminate leopards from Unguja island. As we have described in detail elsewhere (Walsh and Goldman 2007), localised hunting and trapping culminated in successive nationwide campaigns of extermination after the Zanzibar Revolution, when colonial controls upon leopard-killing were ignored.

When we began our joint research in 1996 we were asked, among other things, to examine the claim that the Zanzibar leopard was domesticated. Simplified leopard-keeping narratives were related so frequently and convincingly that a number of researchers believed them to be factual, or at least worth investigating further (see Walsh and Goldman 2012). However, as soon as we heard the detailed accounts that most other outsiders had not had access to, it was evident that they were too fantastic to be true, but were similar to other witchcraft beliefs and could be understood accordingly. From this (classic anthropological) point of view, both the witches and the kept leopards of Unguja are imaginary beings: unless under duress or suffering from delusion no one in Zanzibar will describe themselves as a witch or leopard-keeper, and there is no evidence at all for the existence of domesticated leopards and leopard-keeping, not to mention breeding and other practices believed to be undertaken by keepers' guilds.¹¹ Unfortunately (from a conservationist point of view) these beliefs have accelerated the demise of the Zanzibar leopard, and turned it into a more familiar kind of cryptid, an

animal that some believe to be extinct but others continue to see. This is the subject we turn to next.

The perceived persistence of the Zanzibar leopard

When we undertook our consultancy in July 1996 there appeared to be good evidence for the continuing presence of the Zanzibar leopard in the south and east of Unguja island. National Hunters' reports indicated that leopards were still being killed (along with other 'vermin'): the last kill on record was from a hunt in Jambiani on 17–18 April 1995 (Goldman and Walsh 1997: 31–36). We were also told of more recent kills by independent groups of hunters. The former secretary of the National Hunters, who worked as our research assistant, told us that 'Omani Arab' hunters from Mlandege in Zanzibar town were rumoured to have killed a leopard at Mtule, between Kitogani and Paje, in March 1996 (Goldman and Walsh 1997: 29). An interviewee in Dimani told us that three leopard cubs had been killed by young hunters in that area on or around 21 April 1996 (Goldman and Walsh 1997: 26). These and reports of earlier kills were supplemented by descriptions of recent leopard sightings and other evidence for their presence, including seven reported sightings in 1996 (Goldman and Walsh 1997: 3, 24–36, 2002: 19–22).

At the time we had no reason to disbelieve these claims, though some experienced hunters said that they had not seen evidence of leopards for a number of years. We knew that most kills by independent and local groups of hunters would be hidden from official view and would not be included in National Hunters' statistics. And their former secretary – who showed us his own list of kills – told us that the National Hunters did not submit records of all of their leopard kills because they were concerned that the hunting of leopards might be stopped by the government. As it happens, when we began our joint research moves were afoot to do just this. The recently passed Forest Resources Management and Conservation Act of 1996 provided for the preparation of lists of protected wild animals and plants, and, in the interim, the use of lists that had been on the statutes since the colonial period but ignored since the Zanzibar Revolution (sections 76–79, part VIII, 'Conservation of Wild Animals and Wild Plants', in *The Revolutionary Government of Zanzibar* 1996: 40–42). The Zanzibar leopard was on the old schedule of protected wild animals (Walsh and Goldman 2007: 1140–1141, 1150), and was about to be included in the new one. As a result it had become illegal (again) to kill, injure, destroy, capture or collect leopards without a special permit, unless this was done 'to defend against an attack or imminent threat of attack on human life' (section 77 in *The Revolutionary Government of Zanzibar* 1996: 40).

This new legislation seems to have had an immediate effect on the practice of the National Hunters. From January 1996 onwards the vermin hunting statistics based on their reports no longer included leopard kills.¹² Since July 1996 we have not been told of any leopard kills by National Hunters. Nor have we heard of any certainly killed by local groups, individual hunters, or

others. In August 1999 the then Head of Conservation in Zanzibar told Goldman that he had heard that a dead leopard had been found near Kinyasini about a year earlier (i.e. sometime in mid-to-late 1998), but he knew no more details, including whether this leopard had been killed or not. We do not know whether the lack of information about leopard kills in the past eighteen years reflects reluctance to talk about an activity that has been (re)defined as illegal, or the fact that very few and perhaps no leopards at all have been killed since 1996. It may be that there are very few or no leopards left to kill on Unguja. Otherwise we wonder whether we would have picked up on more stories of kills had we spent longer in the field or interviewed more hunters during subsequent research trips and other visits to Zanzibar.

At the same time, reports of leopard sightings and other evidence for their presence continue to reach us. Every time we visit Zanzibar and meet with former colleagues working in the Department of Commercial Crops, Fruits and Forestry (DCCFF) we are titillated with tales of sightings and other incidents, some of them involving kept leopards and their alleged keepers, others more prosaic, and so to us more believable. During a visit in October 2007, Walsh was told at the headquarters of Jozani–Chwaka Bay National Park that about three months earlier a ranger on night patrol had reported seeing a tree shaking and then a half-eaten Blue monkey (*Cercopithecus mitis*) – presumed to be a leopard’s meal – lodged in its branches. The details of this, it was said, had been recorded by the Chief Park Warden (who was one of our research assistants in 1996), and in a subsequent interview the latter recounted that the ranger in question was a forty-year-old man from Ukongoroni, and that what he had actually seen was not a monkey, but a leopard in a fork of a tree about four metres off the ground. This was not at night, but around ten o’clock in the morning at a place called Kiwandani. The Chief Park Warden was not sure of the date: he had maybe interviewed the ranger in April, and perhaps the incident had taken place in January 2007. The ranger was very excited when he came to tell him what he had seen. He described making eye contact with the leopard, whereupon he began to step slowly backwards, thinking that the leopard’s keeper might be somewhere near. He also related how he had watched the leopard stretching its way down the trunk of the tree after leaving the fork in which it was resting. He had not seen a leopard for many years, but claimed not to have been frightened by this unexpected encounter.

It is instructive here to note the discrepancies between the second- and third-hand reports of this sighting: the ranger involved would presumably have given a different account again. In the same interview the Chief Park Warden also mentioned that leopards had been much in evidence in Makunduchi in 2007: they were reported to have preyed on chickens, ducks and goats, and villagers had responded by reading the *halbadiiri* curse (see above) against the leopard keepers, whoever they were. Other reports of leopard sightings have come to us by email. In February 2009 the Zanzibari owner of Zala Park, a small private zoo in Muungoni, wrote to say that a leopard had been heard at Mtule on the Kitogani–Paje road, and that the watchman at a brickmakers

claimed to have seen it twice, in December 2008 and January 2009. In March 2009 we were copied into correspondence by the Chief Park Warden reporting that since the start of the year four rangers had independently seen a leopard at a single location in the forest in Jozani–Chwaka Bay National Park. The last sighting was on 1 March. We were unable, however, to obtain further details about these sightings. It is difficult to elicit information on cases like this at a distance, though our former assistant does make an effort to record particular incidents. Indeed he was also involved in the following case, which provides further illustration of the difficulty that we have in verifying reports and reconciling the accounts of different informants.

In April 2002 this officer told Walsh that in August 2001, while undertaking a survey of the mangrove forest northwest of Jozani, he, other staff, and the local villagers who were also members of the surveying team, had come across leopard tracks at Wangwani. They followed the spoor until they encountered the remains of a male Suni antelope (*Neotragus moschatus*), which they assumed to have been killed by the leopard. He collected one of its horns and also leopard faeces from the site, and took them back to Forestry Commission headquarters at Maruhubi, where they were kept in bottles. However, when Walsh asked to see this material, it could not be found, and he was led to understand that the bottles had probably been thrown away by cleaners or other staff, perhaps afraid of the presence of leopard-related relics in their workplace. Walsh followed this up by interviewing a Jozani forest guard who had been present when the finds had been made at Wangwani. He provided a detailed account that differed in a number of ways from the first one. He agreed, however, that they had collected leopard faeces, adding that the men on the team (eight in all) were quite apprehensive about this, afraid that it was a kept leopard and knowing that keeping such objects was a dangerous thing to do. The first officer (our former assistant) later said that he had kept this material on his desk for some time, but that it had indeed been thrown out by the office cleaners. It emerged that the same fate had also befallen presumed leopard scat collected by Goldman and handed over to the office in 1997.¹³ In January 2003 Goldman followed up on the Wangwani case. Two of the other men who had been on the original survey team took her to the site of the antelope kill, and provided accounts that were at variance with both of those given to Walsh. They could not cast any light on the loss of the material taken to Maruhubi, but like others in the party were clearly steeped in leopard-keeping lore and not entirely happy with the collection of leopard faeces. Further efforts by Goldman to find out more information produced only more discrepancies, but did at least result in the finding of the original data record of the mangrove survey (Walsh and Goldman 2012: 736–737).

Despite the discrepancies, and the allusions to leopard-keeping, it is easy to imagine a core of truth in these accounts, and to hypothesise that they were based on real sightings and/or signs of a leopard's presence – or another animal mistaken for a leopard. But other claims stretch credibility. We have written at length elsewhere (Walsh and Goldman 2012) about the 'kept leopard chases'

that a number of researchers and visitors to Zanzibar have taken part in and sometimes paid money for, lured by the promise of being shown a tame leopard. These quixotic quests for imaginary animals have always proved fruitless, much to the chagrin of their pursuers. In recent years Zanzibari conservationists have joined the pursuit along with non-Zanzibaris beguiled by leopard-keeping narratives. In January 2003 DCCFF staff told Goldman about an ongoing kept leopard chase that had involved a number of them. According to one official in the department, it began three months earlier with reports of leopard predation on livestock. Another official in the same department denied that there had been reports of leopard attacks on livestock. Instead he claimed that the case had been brought to the attention of the DCCFF because a leopard had been seen entering and leaving a house in Marumbi, and the person who had observed this had been bewitched and struck mute. DCCFF employees were sent to follow up on these reports, and one of them saw the house of the supposed leopard keeper together with a peculiar opening at the back that would allow a leopard to come and go. The visitors met with the deputy *Sheha* (local administrator) to talk about events, but were spooked into silence when they realised that the alleged leopard keeper was lurking nearby. A DCCFF team returned again in January 2003, and their leader asked the deputy *Sheha* to collaborate in an attempt to get a photo of the kept leopard. The deputy was very reluctant to agree to this and clearly afraid, but was told that as a government employee he had no option but to cooperate. Eventually he yielded, but it was agreed that when the researchers returned with a camera they would have to pretend that they were doing something else, like surveying monkeys or birds. Back in Zanzibar town, the team leader approached Goldman, who was then photo-trapping in Jozani forest, hoping that she would carry out the plan, for which transport for a team of DCCFF staff as well as money for accommodation and a payment to the *Sheha* were all required. While she considered the limited time and resources at her disposal – and the implications of the discrepancies in different accounts, together with a rumour that the leopard in question had been shifted to another location – the team leader promised to write a letter of introduction that would smooth the way with the local administrator. This letter was never delivered and there were other indications that the DCCFF had dropped their plan to follow up on this case. That was the last we heard of the Marumbi leopard.

Whereas foreign researchers have sometimes been beguiled into believing that leopard-keeping is really practised on Unguja, some Zanzibari researchers and others have sought to reconcile their own witchcraft beliefs with conservation science by proposing that kept leopards be displayed to the public and tourists in particular. The idea of a zoo or holding pen for leopards was suggested by one of the American student researchers referred to earlier, Benjamin Selkow (1995: 12); it has since been taken up enthusiastically by Zanzibaris believing that leopard keepers might make good use of their leopards in this way. One of our research assistants in 1996, the former secretary of the National Hunters, asked a number of our interviewees whether it would be

feasible to persuade leopard keepers to display their leopards to the public and fee-paying tourists. The same idea also came up in the discussion that followed our end-of-fieldwork presentation to the Jozani–Chwaka Bay Conservation Project (JCBCP) and other government staff (Walsh 1996). We were careful in that meeting not to overtly criticise the beliefs of the many people in the audience who believed in leopard-keeping, and we did not question the display proposal as directly as we might have done otherwise. In October 1996 Goldman and a colleague in the Commission for Natural Resources were asked to investigate just such a proposition. They met with four men in Kizimkazi who wanted to capture and display leopards: they claimed to have seen a leopard in the area in recent months, and thought it possible that this and indeed all leopards were kept. But they had no clear idea of how they would obtain and care for the animals, other than making a range of suggestions (for details see Walsh and Goldman 2012: 738). The proposal did not receive official approval and Goldman (who was then working for JCBCP) heard nothing more of this scheme.

The leopard display idea clearly did not wither and die after the dissemination of our final report, in which we made it clear that we thought leopard-keeping to be wholly imaginary (Goldman and Walsh 1997: iii, 1, 13–15). Indeed, it surfaced in a quite unexpected place, in a debate in the Zanzibar House of Representatives in April 2003, when the Deputy Minister for Agriculture, Natural Resources, Environment and Cooperatives declared that his ministry would be happy to buy leopards to display them to tourists (Walsh and Goldman 2012: 739). As far as we are aware, no one has yet come forward to sell a live Zanzibar leopard to the government.¹⁴ Needless to say, proposals for the display of leopards continue to be made by independent entrepreneurs such as the owner of Zala Park. In February 2009 he wrote to Goldman to tell her about his plan to build a leopard enclosure at a site in Pete. He asked for any advice she could give on keeping leopards for the purposes of conservation, education and research. In a subsequent communication he declared that he had been forced to put his plans for the new facility on hold because he had been denied permission by the authorities. Expansion of the existing zoo at Muungoni would also require official approval if he was to display animals protected under the Forest Resources Management and Conservation Act of 1996.

These contemporary notions about the possible social and economic benefits of displaying captive leopards are indicative of the continuing strength of the leopard-keeping narratives that underpin them. Meanwhile, we can hypothesise that the cultural salience of leopards on Unguja, the widespread belief in the existence of leopard-keeping, and the consequent apprehension that many people feel about this form of witchcraft, result in many more imagined sightings and claims regarding leopards than would otherwise be the case. Hunters themselves note that some of their colleagues and fellow villagers are liable to mistake other, smaller carnivores on the island for leopards.¹⁵ These include the spotted and banded African civet (*Civettictis civetta*), which

is explicitly compared to the Zanzibar leopard (see Table 3.1), and the Zanzibar servaline genet (*Genetta servalina archeri*), known in some parts of Unguja as *uchui* (Goldman et al. 2004: 6), literally ‘the slender leopard’.¹⁶ The tracks of different local carnivores (and sometimes other animals) can also be readily confused, for example when they have been made in sand or on dusty ground. During their 1997 survey, the Stuarts, who had authored a field guide to tracks and signs (1994), were disappointed by a number of such misidentifications. They cast doubt on the identity of the alleged leopard pugmarks illustrated in our printed report (Goldman and Walsh 1997: 56), and concluded that many islanders erroneously attribute the tracks of the African civet to the leopard (1997a: 4; 1997b: 1; 1998: 37).¹⁷

There is a large literature on the psychology of eyewitness testimony (for example Kapardis 2003: 21–125), and a smaller literature on the evaluation of claimed animal sightings, some of it written by cryptozoologists (for example Rabbit 2002). It is widely acknowledged that preconceptions can affect perceptions, and there is little doubt that this has happened in the case of the Zanzibar leopard, generating both false sightings and the misinterpretation of tracks and perhaps also other signs. Kept leopards and leopard keepers are imaginary beings, and belief in them has certainly contributed to imagined sightings, mistaken identifications, and the proliferation of gossip and rumour relating to these (compare Stewart and Strathern 2004). But some false attributions would probably be made anyway, for example when other animals or indirect evidence for their presence are confused with the leopard and its presumed signs. It is also possible that some misidentifications are not involuntary, but fabricated or otherwise elaborated by informants eager to please researchers, as the Stuarts argued (1997a: 4). We have seen examples of this ourselves when asking people to identify photographs of animals, a procedure which suffers from a number of pitfalls (see Barley 1983: 96–97; Diamond 1989).

This leads us to ask whether all recent reports of leopard sightings and signs can be explained away, as the Stuarts suggested, although even they allowed that a few individual leopards might survive (1997a: 3; 1997b: 1). As we have seen, some reports are more convincing than others. Leopards elsewhere are known to be largely nocturnal and secretive animals, capable of roaming through city suburbs as well as through the African countryside without being observed (Guggisberg 1975: 228; Hurn 2009: 6; Seidensticker 1991: 107; Nowell and Jackson 1996: 28; Sunquist and Sunquist 2002: 321). With this in mind, we cannot entirely rule out the possibility that the Zanzibar leopard does persist, as we stated in an earlier paper (Goldman and Walsh 2002). The same is suggested by the relatively recent discovery of two nocturnal carnivores on Unguja: the Zanzibar servaline genet in 1995 (Van Rompaey and Colyn 1998; Goldman and Winther-Hansen 2003a; 2003b), and a local population of the African palm civet (*Nandinia binotata*) in 1998–99 (Perkin 2004). Both of these were previously unrecorded, though they were known to villagers (Goldman et al. 2004).

Discussion and conclusion

The title of Jared Diamond's Extant unless proven extinct? Or, extinct unless proven extant? (1987) summed up a question that continues to be debated by conservation biologists (for example Brussard 1986; King 1988; Mace and Collar 1995; Reed 1996; Kéry 2002; Butchart et al. 2006; Roberts et al. 2009; Vogel et al. 2009). How is extinction in the recent past to be recognised or inferred? As Diamond and others have observed, detecting extinction is often easier said than done. The various qualitative and quantitative answers given to this question have influenced successive editions of the IUCN Red List of Threatened Species.¹⁸ The *Guidelines for Using the IUCN Red List Categories and Criteria* (Version 8.1) state that:

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycles and life form. (IUCN 2010: 9)

Operationalising this definition, however, and drawing a sharp dividing line between the IUCN categories of Critically Endangered and Extinct, has proved problematic. One problem is that premature declarations of demise can lead to what has been called the 'Romeo error', whereby 'any protective measures and funding are removed from threatened species in the mistaken belief that they are already extinct' (IUCN 2010: 67, citing Collar 1998). In response to discussions of this problem (see Butchart et al. 2006), the IUCN has introduced a qualifying tag so that taxa of indeterminate status can be described as 'Critically Endangered (possibly extinct)':

Critically Endangered (possibly extinct) taxa are those that are, on the balance of evidence, likely to be extinct, but for which there is a small chance that they may be extant. Hence they should not be listed as Extinct until adequate surveys have failed to record the species and local or unconfirmed reports have been investigated and discounted. (IUCN 2010: 67)

If we had to choose a category (and tag) for the Zanzibar leopard it would probably be this one.¹⁹ But we are also aware that a single corroborated sighting (for example supported by photographic evidence), or a physical specimen (and genetic profile) with well-documented provenance, would be sufficient to remove the 'possibly extinct' tag, at least in the short term.

Compare the Stuarts' conclusion following their 1997 survey:

We encountered absolutely no sign of leopards during the survey and we believe that this cat is now extinct on the island, or at best present in such

low numbers that there is little, or no, hope of doing anything to save it in the wild state.

(Stuart and Stuart 1997b: 1)

Although they allowed for the survival of leopards, this pessimistic statement, as we have seen, discouraged further research and efforts to develop a leopard conservation programme.²⁰ The Stuarts' search for leopards and leopard sign, which included camera-trapping, together with a later photo-trapping survey conducted in Jozani forest by Goldman and Winther-Hansen (2003a), have been the only systematic attempts to detect the Zanzibar leopard to date. These and other camera-trapping exercises on the island do not constitute the 'exhaustive surveys in known and/or expected habitat' without any record of an individual that are required if a taxon is to satisfy IUCN criteria for extinction. The Stuarts were sceptical about the evidence for recent leopard kills and sightings that we recorded in our 1997 report, and discounted other reports that they heard in the field without thoroughly investigating these. Nor, it must be said, have we had the opportunity to follow up many of the accounts that we have been given since 1997 that might be counted as 'reasonably convincing recent local reports or unconfirmed sightings' and that would support the categorisation of the Zanzibar leopard as 'Critically Endangered (possibly extinct)' (IUCN 2010: 68). Needless to say, it would be difficult to apply probabilistic methods for inferring extinction (for example Roberts et al. 2009; Vogel et al. 2009) to these reports, given questions about their reliability, and the fact that many of them are not first-hand. Likewise any attempt to use the statistics of leopard kills for the same purpose would run into difficulties because they represent kills by only one group – the National Hunters – and because they appear not to have been kept once it became illegal again to kill leopards. Even if these methods were applied, it would only take a single corroborated observation, sample or specimen to falsify a hypothesis of extinction. Argument then shifts to determining what exactly counts as corroboration and so adequate evidence for falsification (see Roberts et al. 2009), and brings us back to assessing the reliability of Zanzibaris' claims to have seen leopards and other signs of their presence.

Cryptozoology flourishes in this epistemological abyss. It is interesting in this regard to compare the case of the Zanzibar leopard with that of the Tasmanian tiger, perhaps the best-known example of a carnivore considered extinct by zoologists but not by cryptozoologists. The last Tasmanian tiger (*Thylacinus cynocephalus*) in captivity died in Hobart Zoo in Tasmania on the night of 7 September 1936, by which time this species of marsupial carnivore may already have been extinct in the wild (Paddle 2000: 175–179, 195–197; Owen 2003: 124–134). It was declared officially extinct fifty years later, this being the period of grace then required by the IUCN Conservation Monitoring Centre (McKnight 2008). However, there has been no shortage of unverified sightings since 1936, both on Tasmania (for example Bailey 2001; Mittelbach and Crewdson 2005) and the Australian mainland (for example Smith 1996:

94–115), where there is evidence for the persistence of thylacines into the first half of the nineteenth century (Paddle 2000: 22–24):

There are many well-meaning individuals, not just in Tasmania, but in all mainland states as well, who, to the present day return from driving or walking in wilderness areas with stories of thylacine sightings. But the criterion for establishing the existence of the thylacine beyond 1936 can only be met through the production of a body, either dead, or, preferably, alive.
(Paddle 2000: 23)

This strict criterion derives from bitter experience. More than a thousand thylacine sightings have been logged with different authorities since 1936, but on further investigation they have dissolved into a melange of fantasy, fakes and false trails (Paddle 2000: 197; Owen 2003: 186–200). As in the case of the Zanzibar leopard, neither qualitative nor quantitative assessments are able to resolve these reports when hard physical evidence is lacking.²¹ Likewise there would be no point in applying probabilistic methods of analysis to reported sightings of the Tasmanian tiger. One group of researchers has developed a bioeconomic model based on historical records of thylacine kills to re-evaluate the likelihood that the species has survived on Tasmania (Bulte et al. 2003). But their optimistic inferences do not falsify the hypothesis of thylacine extinction in the 1930s. They only make it less likely – and then only if the model's assumptions and parameters are deemed reasonable. This kind of modelling and projection is no substitute for hard evidence, though it has its attractions when hard evidence is hard to come by.

There are a number of similarities, as well as important differences, between the Zanzibar and Tasmanian cases. As is well known, European settlers on Tasmania had driven the indigenous human population to near extinction just as they set about exterminating the island's thylacines (Davies 1973; Ryan 1996). As a result we possess scant information on the ethnozoology of different Aboriginal Tasmanian groups, including their knowledge and practices relating to the Tasmanian tiger, though it seems that for some groups it had religious and cultural significance over and above its value as a possible item of food and whatever threat it posed to them as the largest predator on the island (Paddle 2000: 18–20). But we do know what the European community and in particular sheep farmers thought about thylacines. They were blamed – wrongly as it turns out – for killing large numbers of sheep, and widespread anger over stock losses led to the thylacine bounties and hunting that accelerated its demise. The Tasmanian tiger was almost universally loathed, and demonised as a ferocious blood-sucking predator (Paddle 2000: 29–35; Bagust 2003; Freeman 2007). These European representations of the thylacine parallel local narratives about the Zanzibar leopard and their alleged keepers, and it is no accident that they both resulted in island-wide campaigns of extermination. And it is very likely that the cultural salience and demonisation of both of these imaginary carnivores has, at different times, contributed to their perceived persistence and the sightings that seem(ed) to confirm this.²²

The Tasmanian tiger was, of course, hunted and trapped to the brink of extinction in the early years of the twentieth century, and it has been presumed extinct for much longer than the Zanzibar leopard, whose status remains rather more equivocal. Relatively few people survive from the generation that last had direct experience of the thylacine, and the dominant narrative about it has undergone a remarkable turnaround in response to the development of mass tourism, the influence of environmentalism and contemporary ideas about the value of biodiversity, and, last but not least, the eager attentions of cryptozoologists (Owen 2003: 135–185; Mittelbach and Crewdson 2005; Turner 2009). Growing interest in the thylacine and the sea change in perceptions of it have had a dramatic impact on the number of recorded sightings, which increased exponentially in the second half of the twentieth century (Owen 2003: 187–189, citing Smith 1981). By contrast, the Zanzibar leopard is still widely feared by villagers, and it is too early to discern any trend in the number of alleged sightings. At the same time, it has already begun to attract the kind of interest from non-Zanzibaris that the Tasmanian tiger has long enjoyed. As we have seen, Zanzibari officials and conservationists have themselves proposed that leopards be kept and displayed in zoos. Leopard-keeping narratives are now highlighted in tourist guidebooks (for example McIntyre and McIntyre 2009: 54; Finke 2010: 136), and, as we have experienced ourselves, park staff and guides in Jozani–Chwaka Bay National Park are quick to tell stories about leopards and their owners to overseas visitors, and need no prompting to do so. Meanwhile, the Zanzibar leopard has also begun to feature on cryptozoological websites and internet forums, influenced in part by our own popular writing about it (for example Walsh and Goldman 2003, 2004).²³

Cryptozoologists form a community with a special interest in speculation about the reality of particular kinds of imaginary being, including species that mainstream zoologists consider extinct. They are notoriously selective, focusing on salient creatures like the Tasmanian tiger but ignoring the vast majority of species that remain to be discovered and/or described by science. Cryptozoologists also typically only make selective use of the methods and literature of anthropology and the specialised discipline of ethnozoology. The case of the Zanzibar leopard illustrates some of the different ways in which a single animal can be imagined: through its imaginary taxonomy, its imagined domestication by other imaginary beings, and imaginary reports of its continuing existence. Anthropological discussions of animism and perspectivism provide other examples (for example Viveiros de Castro 1998; Bird-David 1999; Fausto 1999; 2004; Pedersen 2001). Cryptozoology, however, is largely concerned with simple ontological statements ('does it exist or not?'), and is generally lacking in epistemological and methodological sophistication, for example when it skips over the problems raised by the demand for falsifiability.²⁴ The claims of cryptozoology to respectability are further undermined by the ease by which some of its proponents extend its boundaries to include alien beings and other subjects that are usually classified as science fiction (for example Bord and Bord 1980). In these and other respects cryptozoology is

naïve and justifiably described as a pseudoscience (see Simpson 1984). It would also comprise a fascinating subject for anthropological investigation.

We began this chapter with an epigraph taken from *The Book of Imaginary Beings* by Jorge Luis Borges and Margarita Guerrero. The passage we have quoted suggests that the universe of imaginary beings knows no bounds and is infinitely expandable (it is 'In brief, the sum of all things – the universe', 1969: 12), a wry observation that the authors quietly demonstrate in typical Borgesian fashion by imagining their own imaginary beings and providing these and other entries in their bestiary with the apparent, but often invented, apparatus of scholarship. This might also be adopted as the epigram for an anthropology of imaginary beings, in which the imaginary leopards and leopard keepers of Unguja take their place alongside other cryptids and their human (and not-so-human) analogues. Cryptozoology lacks the breadth of vision that this imaginary discipline would require. There is a nice example of this in one of the many cryptozoological compendiums compiled by Karl Shuker, in which he includes an entry for 'a grotesque sea monster termed the *hide*, documented by Jorge Luis Borges in his famous work *The Book of Imaginary Beings*' (2005: 79). Shuker's description of this legendary creature is taken from a short chapter on the 'Fauna of Chile' in the English translation of Borges and Guerrero's book (1969: 63–65). This was one of four new pieces written by Borges with his English translator, who has since made it clear that they are sprinkled with personal jokes (di Giovanni 2003: 27). Fortunately for Shuker, the paragraph about 'The *Hide*' (1969: 65) was translated word-for-word from a study of Chilean traditions that really exists (Vicuña Cifuentes 1910: 18). But he should not have relied on a work of fiction for his facts, at least not without tracking this story to its immediate source. This provides other accounts of the legendary '*El Cuero*', as well as information on their provenance – a good starting point for real anthropological and ethnozoological enquiry. We rest our case.

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Notes

- 1 The first edition of *The Book of Imaginary Beings*, published under the title *Manual de zoología fantástica*, was presumably largely written before Borges' breakup with Guerrero in 1952 (Williamson 2004: 319). The second edition, *El*

libro de los seres imaginarios (1967) was expanded and retitled, while the English translation by Norman Thomas di Giovanni (1969) was enlarged by Borges in collaboration with the translator himself (di Giovanni 2003: 27, 133). Heuvelmans' work first appeared in two volumes in 1955 as *Sur la piste des bêtes ignorées* (1955). Examples of cryptozoological 'bestiaries' inspired by the English translation and its subsequent revision (1962) and abridgement (1965) include Costello (1979), Shuker (1993), Coleman and Clark (1999), Eberhart (2002) and Arment (2004). Many similar works are listed in Shuker's bibliography (1999–), and a multimedia compilation would include large numbers of cryptozoological websites. The term 'cryptozoology' doesn't actually appear in *On the Track of Unknown Animals*, but was used by Heuvelmans in subsequent correspondence, following which he became known as the 'Father of Cryptozoology' (Coleman 2001; Eberhart 2002: xlvii).

- 2 This heterogeneous list is reminiscent of another, much discussed, Borgesian spoof, the classification of animals in 'a certain Chinese encyclopedia called the *Heavenly Emporium of Benevolent Knowledge*' (Borges 1999: 231; see Foucault 1970: xv–xxi; Lakoff 1987: 92–96). As we shall see, some Zanzibaris would assign the Zanzibar leopard to category (c) in Borges' imaginary classification, 'those that are trained', while sceptical observers might place it in (f) 'fabulous ones'.
- 3 For a more detailed review of our research on the Zanzibar leopard through to the present see Walsh and Goldman (2012: 729–730).
- 4 The historical overview in this and the following paragraphs draws on Walsh and Goldman (2007, 2012: 728–730) and the references cited therein.
- 5 'Within the period of the study I succeeded to see one wild leopard at Mapopwe study area [...] and Fatina Omari in 1981 (pers. comm.) sighted a leopard at Jozani study area' (Swai 1983: 53). Pakenham (1984: 49), citing an unpublished paper by the latter researcher, gives different dates: 'Leopards were observed as recently as 1980 and 1982 (Mturi 1983).' We haven't seen this paper to check whether they are referring to the same observations.
- 6 Note, however, that in reply to a question tabled in the Tanzanian parliament on 14 June 2007 about the possible reintroduction of animals that had disappeared from Zanzibar, Professor Jumanne Abdallah Magembe, Minister for Natural Resources and Tourism, stated that the Zanzibar leopard was 'the only animal which is believed to have disappeared from the forests of Zanzibar' (Bunge la Tanzania 2007: 13, our translation from the Swahili original).
- 7 Unguja island is generally agreed to have been separated from the African mainland since sea levels rose at the end of the last Ice Age; it is therefore presumed that the Zanzibar leopard has been genetically isolated from its continental relatives for the same period of time. The Sri Lankan leopard is thought to have been isolated for a similar length of time, whereas the Javan leopard displays much greater genetic divergence from other Asian subspecies (Miththapala et al. 1996: 1123–1124).
- 8 Only one of these interviewees was a woman, the informant in Ndudu who named one variety after the African civet (*ngawa*), and described the colour of another (*mwanzu*) by pointing to a nearby *kisutu* cloth. It may be no coincidence that *kisutu* is also the most widely known varietal name (see Table 3.1).
- 9 Given that they were students with limited training in zoology and anthropology, we do not mean to denigrate their work, which provided a valuable starting point for our own research. It might be noted, though, that they were both advised by Tony Archer, a wildlife consultant with much more zoological (if not ethnozoological) expertise (see Walsh and Goldman 2012).
- 10 This section draws on our original report (Goldman and Walsh 1997) and a paper on the history of leopard-killing (Walsh and Goldman 2007).
- 11 We are aware that leopards, like other wild animals, can be habituated to humans, particularly if they are hand-reared from a young age, but there is no documented

precedent, or rational explanation, for the behaviours described in leopard-keeping narratives. Moreover, when researchers have been offered the opportunity to see kept Zanzibar leopards (in exchange for a payment), the leopards have without exception failed to materialise. There is therefore not even hard evidence for the practice of keeping Zanzibar leopards as semi-domesticated pets, let alone for the other extraordinary claims that are made about kept leopards.

- 12 In addition to the statistics for the years 1983–95 analysed in our earlier work (Goldman and Walsh 1997; 2002), we have since obtained a complete record for 1995, and for the years 1996–99 and 2001–02.
- 13 Our interest in locating this material was prompted by the possibility that it might be used in genetic analysis, but nothing kept in the Maruhubi office appears to have survived, including the photographs of the leopard pelt and presumed pugmarks that were included in the original printed version of our 1997 report (Goldman and Walsh 1997: 55–56, figs 7–12): these particular images are therefore absent from the more widely distributed pdf version of the report.
- 14 Since we wrote this paper, however, at least one attempt has been made to pass off other live cats as specimens of the Zanzibar leopard. In September 2012 two young felids purported to be Zanzibar leopard cubs were brought into DCCFF offices and offered for sale for the princely sum of Tshs. 50 million each. It was immediately apparent that these were not leopard cubs and the would-be sellers were sent away. Subsequent examination of photographs of these animals suggested that they were the kittens of domestic cats.
- 15 On the other hand, there are a number of reports of a leopard being accidentally shot by a hunter who has caught no more than a fleeting glimpse of it in the dark, and assumed that it was a duiker or other animal.
- 16 The local dialect name *uchui* (earlier **luchui*) is derived from a combination of the Swahili class 11 noun prefix *u-* (**lu*), which typically signifies length and/or thinness, and the noun root *-chui*, ‘leopard’ (compare Nurse and Hinnebusch 1993: 349–351, 639).
- 17 Ordinarily, pawprints left by African civets and leopards are readily distinguishable because the former include claw marks whereas the latter do not: leopards keep their claws retracted when walking (Stuart and Stuart 1994: 17, 19, 26, 40). The Stuarts argued that the clawless pugmarks that are sometimes observed on paths in the forest and bush are signs of large African civets whose claws have been worn down by the rocky outcroppings prevalent on the coral rag of Unguja. Zanzibaris who are knowledgeable about wildlife deny this; according to them, African civet claws are never abraded to the extent that they leave no trace in pugmarks.
- 18 For the IUCN Red List and its background see www.iucnredlist.org/ (accessed: 30 April 2011).
- 19 Our Zanzibari informants, however, have offered a wide variety of opinions that would translate into the full range of IUCN categories and tags: Not Evaluated, Data Deficient, Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Critically Endangered (possibly extinct in the wild), Critically Endangered (possibly extinct), Extinct in the Wild, and Extinct (IUCN 2010: 7–9, 67–70)!
- 20 This example suggests that applying the ‘possibly extinct’ tag might not always avert the Romeo error: declaring an animal extinct or almost certain to become so (‘Going or gone’ in the words of the title of Butchart et al. 2006) can kill off hope and funding for its conservation as effectively as pronouncing its definite extirpation.
- 21 As we have already indicated, we would also accept as evidence well-provenanced recent samples of faeces, hair, and other material that can provide DNA for genetic analysis. Likewise, clear photographs taken by researchers with professional

- credentials and/or in the course of properly documented photo-trapping surveys are generally accepted as reliable evidence for an animal's presence.
- 22 Gregory Forth has suggested to us the interesting idea that extinct animals leave a 'shadow' in folk memory, such that the image of it is retained in discourse, influencing the interpretation of sightings and other signs by people who may be unaware that the animal in question is in fact extinct (personal communication, 12 March 2011). The names of animals do not necessarily follow them into oblivion, and will always continue in use for a time after their referents have disappeared. The same applies to lore about extinct creatures, and the cases of the Zanzibar leopard and Tasmanian tiger suggest that the persistence of such lore and its effects (which include false sightings) is at least in part a function of an animal's cultural salience. To the extent that the cultural significance of an animal does not depend on scientific or equivalent assessments of its status, then imagined sightings, rumour and gossip provide all the confirmation that is required to ensure that an extinct animal lives on in local discourse.
 - 23 See, for example, the post 'Zanzibar leopard Do you think it still exists or now extinct' [sic], online at www.unexplained-mysteries.com/forum/index.php?showtopic=193518 (accessed: 1 May 2010). Most of the text of this post is taken from the *Wikipedia* article on the Zanzibar leopard, http://en.wikipedia.org/wiki/Zanzibar_Leopard, which cites our own publications.
 - 24 For a sustained, but not entirely convincing, attempt to counter these and other charges against cryptozoology see the first part, entitled 'Science', of Chad Arment's *Cryptozoology: Science and Speculation* (2004: 9–156). The second part, headed 'Speculation', undermines the first (2004: 157–338).

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